

Assembling Laser Cut Wood Kits

Start by examining the kit and making sure all the parts are there. All the notches should fit together with a slight friction fit. However, the thickness of the plywood varies some, so if the fit on a part is too tight, sand the mating part slightly until it is thin enough to fit without forcing it.

Assembling the hull

1. Join the sub-deck and the keel together at the dovetail joints.



2. Add any cross pieces needed to complete the sub-deck.
3. If the sub-deck bends up at the bow, several cuts need to be made to make this bending easier. Using a saw, cut



about 3/4 of the way through the sub-deck in several places. Gently flex the sub-deck to make sure it bends, taking care not to break the top layer of the plywood.

4. Add the ribs to the keel.



5. Once all the ribs are fitted in keel, add the sub-deck. The saw cuts on the sub-deck should be facing down so that the cuts will be on the bottom side of the

sub-deck. Do not glue anything yet.



The sub-deck should follow the curve of the ribs and the keel should be flat on the table. If the keel bows up in the middle, make the cuts in the sub-deck deeper and make sure the sub-deck bends easily.

6. Add some weight to hold the bottom of the hull firmly to the table. Check to make sure that the sub-deck is level and has no twist. When you are satisfied that everything is aligned, glue it together with thin CA. Reinforce the glue joints with thick CA or epoxy.
7. Add the 1/8"x1/4" stringers to sides of the hull. Start at the stern where the most curvature is and move towards the bow. Where there is a lot of curvature, sand the slot sides to angle them and make it easier to fit the stringer. Cut the stringers so that all the joints are at a rib. Make sure that the bottom of the keel remains flat with the stringers fitted. Once satisfied with the fit, glue the stringers.

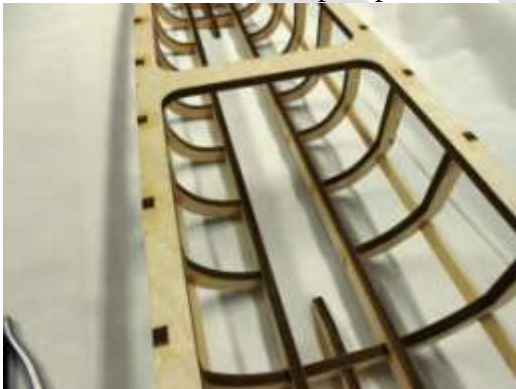


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8. Due to the hull shape at the stern where the hard area changes from -1" to 45 degrees, a continuous stringer will not always fit correctly. Use a separate stringer from rib where the -1" hard area ends to the stern. Cut the stringers so that all the joint ends meet at a rib. Make sure that the bottom of the keel remains flat with the stringers fitted. Once satisfied with the fit, glue the stringers.
9. If the kit has additional stringers for bulges or casemates, add them now.
10. Add the two water channel keels to the ribs, spaced wide enough to fit your pump. Glue the water channel keels.



11. Cut out the centers of the ribs and center keel between the water channel keels. This will form the water pump channel.



12. Using a plane and/or sanding block, blend the sub-deck with the ribs.



13. Glue in the rudder tray
14. Now is the best time to waterproof the hull. Using the sealer of your choice (spar varnish or laminating/finishing epoxy are good choices) coat the entire hull assembly. If the wood soaked up all the sealant and looks dry, put on a second coat.
15. Sheet the bottom of the hull with using your preferred method. 1/32 plywood is recommended, but balsa blocks or 1/64 plywood can also be used. Trim the sheeting even with the top of the stringer.



16. Fill forward of the first bow rib and aft of the last stern rib with wood blocks and sand to shape. If the curve of the hull is too much to wrap the plywood around, additional rib bays can be filled with wood blocks.



17. Sand the wood blocks to the shape of the ribs and blend with the sheeting.
18. Add spackling or other filling to the hull if necessary to smooth out the bottom of the hull. Make sure to fill all gaps so that, when the hull is glassed, epoxy will not drip through.
19. Open up holes for the stuffing shafts through the bottom sheeting. Using the holes through the ribs to align stuffing

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shafts, make sure they fit freely.



20. Using a 5/32 drill, drill through the keel for the rudder post. The hole in the rudder tray and a shallow notch on the stern keel is used to locate the rudder post.

21. Attach the deck to the hull, using epoxy and clamps.



22. Sand the sides of the deck flush with the sub-deck.

23. Fiberglass the bottom of the hull with 2oz to 4oz fiberglass cloth and laminating or finishing resin. Cut the cloth slightly oversized and set it on top of the hull. Plan to use separate pieces for the vertical parts of the stern and bow, since the cloth will not wrap



around these areas. Start by pouring a small bead of epoxy on the cloth along the center of the hull, and then use a brush or squeegee to spread it to the edges. Allow plenty of time for the epoxy to work through (wet) the fiberglass before adding more epoxy. Work on a small area at a time, and



make sure the cloth is wrinkle free before moving on to the next area.

24. Once the epoxy is cured, trim the edges of the fiberglass. Open up the holes for the shafts and rudder and sand down any seams.

25. Install a 5/32" (1/8" ID) brass tube for the rudder post. The post should extend about 1/8" below the bottom of the hull.

26. Glue a 1/8" brass rod into the rudder. Tack the shaft to the rudder with CA and fill in the rest of the slot around the shaft with epoxy.

27. Shape the rudder with sandpaper into an airfoil shape. Start by making a line down the center of the back and front face of the rudder. Round the front, using the line to keep it even. Now sand



the back down to a point about 1/16" thick. Add fiberglass cloth to the sides of the rudder to make it more durable.

28. The stuffing shafts are made from 9/32 brass tube. Make drive shafts out of 1/8" brass or steel rod and get some 1/8" ID x 1/4" OD oilite or similar bearings to hold the shafts in the tubes. Any outer shafts will generally be dummy (non-driven) shafts, so bearings and a full shaft are not necessary.

29. To install the inside stuffing shafts, first install the rudder and the props on the

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shafts. Now slide the stuffing tubes into



the hull, making sure that the props are close to, but slightly ahead of the rudder. The rudder should move freely from side to side without hitting the props. Check that the stuffing shafts are fully through the ribs inside the hull and then glue in with epoxy, forming a small fillet around each shaft to ensure a water tight joint.

30. Make braces for each of the stuffing tubes and add them approximately 1/2" from the end of the tubes.

Rudder Pull-Pull Systems

Rudder pull-pull parts are included in some kits to make it easier to hook up the rudder. If you plan to use the provided parts, follow the instructions below:

1. Sand or cut a small groove in on the edges of both parts to help keep the line in place. Harden the edges with CA.
2. The 1/4" rudder pulley with the keyhole is glued to the rudder post. Put a washer between the rudder post and wood and

make sure the tube is well oiled before gluing. Glue together using epoxy or thick CA - do not use thin CA!

3. Place the 1/8" servo arm under the stock servo horn and drill 1/16" holes through one of the holes on each side. Attach the wood arm to the servo horn using small screws.
4. Thread a piece of Kevlar thread, or 30lb+ fishing super line, through one hole of the servo arm. Anchor the thread using a screw.
5. Wrap the line around the rudder pulley, going completely around once before threading the line through the other end of the servo arm.
6. Pin the line at the rudder end by trapping the line in the keyhole with a toothpick.
7. Thread the line through the hole in the servo arm and wrap it around the second screw.
8. Pull everything tight and then, using the screw, put tension on the line.
9. Check for free movement of the rudder. A strong spring can be added to the line to keep it taut and absorb hits on the

